AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method for coding at least one characteristic of at least one pulse within a pulse train, comprising the steps of:

(a) specifying pulse characteristics relative to at least one non-fixed reference in accordance with a delta code of a plurality of delta codes, wherein the pulse characteristics define one of a plurality of communication channels defined by said plurality of delta codes; and

(b) applying ~~a~~ said delta code ~~for specifying said at least one pulse characteristic~~ relative to said at least one non-fixed reference.

2. (Currently amended) The coding method of claim 1 further including the steps of:

(c) allocating allowable and non-allowable characteristic regions relative to said at least one non-fixed reference; and

(d) applying the delta code relative to said allowable and non-allowable characteristic regions.

3. (original) The method of claim 2, wherein said allowable and non-allowable characteristic regions are relative to at least one definable characteristic value within a layout.

4. (original) The method of claim 3, wherein said at least one definable characteristic value is relative to at least one reference.

5. (original) The method of claim 1, wherein said at least one reference is a characteristic value of a given pulse.

6. (original) The method of claim 5, wherein said given pulse is a preceding pulse.

7. (original) The method of claim 5, wherein said given pulse is a succeeding pulse.

8. (original) The method of claim 1, wherein a pulse characteristic is a temporal

characteristic or a non-temporal characteristic.

9. (original) The method of claim 8, wherein the non-temporal pulse characteristic includes at least one of a pulse width characteristic, a pulse polarity characteristic, a pulse amplitude characteristic and a pulse type characteristic.

10. (original) The method of claim 8, wherein the temporal pulse characteristic corresponds to a pulse position in time.

11. (original) The method of claim 1, wherein the delta code is a pseudorandom delta code.

12. (original) The method of claim 11, wherein the pseudorandom delta code is a Poisson code.

13. (original) The method of claim 11, wherein the pseudorandom delta code is a constrained Poisson code (or, as a special case, a uniform delta code).

14. (original) The method of claim 1, wherein the delta code is a deterministic delta code.

15. (original) The method of claim 14, wherein the deterministic delta code is generated using the sequential delta code generation methodology.

16. (original) The method of claim 15, wherein the deterministic delta code is generated using the Rational Congruential Sequential Delta Code generation methodology.

17. (Previously Amended) The method of claim 16, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^n \bmod M$, where *f* is a function of variable *x, M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1, and n is a nonzero integer.

18. (Previously Amended) The method of claim 16, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^{-1} \bmod M$, where *f* is a function of variable *x, M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

19. (Previously Amended) The method of claim 16, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax \mod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

20. (previously Amended) The method of claim 16, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^2 \mod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

21. (previously Amended) The method of claim 16, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^3 \mod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

22. (original) The method of claim 14, wherein the deterministic delta code is generated using the iterative delta code generation methodology.

23. (original) The method of claim 22, wherein the deterministic delta code is generated using the Rational Congruential Iterative Delta Code generation methodology.

24. (previously Amended) The method of claim 23, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^n \mod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1, and n is a nonzero integer.

25. (previously Amended) The method of claim 23, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^{-1} \mod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

26. (Previously Amended) The method of claim 23, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax \mod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a

parameter, with possible values of 1, 2, ...M-1.

27. (Previously Amended) The method of claim 23, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^2 \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

28. (Previously Amended) The method of claim 23, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^3 \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

29. (original) The method of claim 22, wherein the deterministic delta code is generated using the Piecewise Linear Iterative Delta Code generation methodology.

30. (Currently Amended) An impulse transmission system comprising:

a Ultra Wideband Transmitter;

a Ultra Wideband Receiver; and

said Ultra Wideband Transmitter and said ~~Time Modulated~~ Ultra Wideband Receiver employ a delta code of a plurality of delta codes~~.~~, wherein said delta code specifies pulse characteristics relative to at least one non-fixed reference, wherein said pulse characteristics define one of a plurality of communication channels defined by said plurality of delta codes.

31. (original) The impulse transmission system of claim 30, wherein allowable and non-allowable characteristic regions are allocated relative to said at least one non-fixed reference and said delta code is applied relative to said allowable and non-allowable characteristic regions.

32. (original) The impulse transmission system of claim 31, wherein said allowable and non-allowable characteristic regions are relative to at least one definable characteristic value within a layout.

33. (original) The impulse transmission system of claim 32, wherein said at least

one definable characteristic value is relative to at least one reference.

34. (original) The impulse transmission system of claim 30, wherein said at least one reference is a characteristic value of a given pulse.

35. (original) The impulse transmission system of claim 34, wherein said given pulse is a preceding pulse.

36. (original) The impulse transmission system of claim 34, wherein said given pulse is a succeeding pulse.

37. (original) The impulse transmission system of claim 30, wherein a pulse characteristic is a temporal characteristic or a non-temporal characteristic.

38. (original) The impulse transmission system of claim 37, wherein the non-temporal pulse characteristic includes at least one of a pulse width characteristic, a pulse polarity characteristic, a pulse amplitude characteristic and a pulse type characteristic.

39. (original) The impulse transmission system of claim 37, wherein the temporal pulse characteristic corresponds to a pulse position in time.

40. (original) The impulse transmission system of claim 30, wherein the delta code is a pseudorandom delta code.

41. (original) The impulse transmission system of claim 40, wherein the pseudorandom delta code is a Poisson code.

42. (original) The impulse transmission system of claim 40, wherein the pseudorandom delta code is a constrained Poisson code (or, as a special case, a uniform delta code).

43. (original) The impulse transmission system of claim 30, wherein the delta code is a deterministic delta code.

44. (original) The impulse transmission system of claim 43, wherein the deterministic delta code is generated using the sequential delta code generation methodology.

45. (original) The impulse transmission system of claim 44, wherein the

deterministic delta code is generated using the Rational Congruential Sequential Delta Code generation methodology.

46. (Previously Amended) The impulse transmission system of claim 45, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^n \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1, and n is a nonzero integer.

47. (Previously Amended) The impulse transmission system of claim 45, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^{-1} \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

48. (Previously Amended) The impulse transmission system of claim 45, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

49. (Previously Amended) The impulse transmission system of claim 45, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^2 \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

50. (Previously Amended) The impulse transmission system of claim 45, wherein the rational function employed in the Rational Congruential Sequential Delta Code generation methodology is of the form $f(x;a) = ax^3 \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

51. (original) The impulse transmission system of claim 43, wherein the deterministic delta code is generated using the iterative delta code generation methodology.

52. (original) The impulse transmission system of claim 51, wherein the deterministic delta code is generated using the Rational Congruential Iterative Delta Code

generation methodology.

53. (Previously Amended) The impulse transmission system of claim 52, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^n \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1, and n is a nonzero integer.

54. (Previously Amended) The impulse transmission system of claim 52, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^{-1} \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

55. (Previously Amended) The impulse transmission system of claim 52, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

56. (previously Amended) The impulse transmission system of claim 52, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^2 \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

57. (Previously Amended) The impulse transmission system of claim 52, wherein the rational function employed in the Rational Congruential Iterative Delta Code generation methodology is of the form $f(x;a) = ax^3 \bmod M$, where *f* is a function of variable *x*, *M* is an integer modulus, *a* is a parameter, with possible values of 1, 2, ...M-1.

58. (original) The impulse transmission system of claim 51, wherein the deterministic delta code is generated using the Piecewise Linear Iterative Delta Code generation methodology.